

## CLAIMS

I claim:

1. A tri weight correlated set of iron-type golf clubs a tri-weight mass positioned correlated set of iron-type golf clubs having the same swing weight, wherein at least two clubs of the set, comprise:

- a. a shaft with a handle,
- b. a head having
  - i. a neck to attach to the shaft,
  - ii. a face with a hitting surface for impacting a golf ball,
  - iii. sides,
  - iv. a top,
  - v. a back surface behind the hitting surface,
  - vi. a bottom sole structured to align with the ground having a heel, and a toe,
  - vii. a first reinforcement sole weight system attached behind the back surface of the club along the bottom sole with its mass thickness structured such that
    1. the height (xy-direction) of its sole mass curvilinearly rises with short linear and/or curved segments from a low point proximate the heel, increases along the sole to a peak reinforcing the middle of the lower back surface of the club behind the most probable hitting surface, and thereafter curvilinearly declines with short linear and/or curved segments to a low point proximate the toe of the bottom of the sole, and
    2. the depth (z-direction) of its sole mass curvilinearly rises with short linear and/or curved segments increasing in thickness from a least thickness proximate the heel and increasing along the bottom of the sole in depth to reinforce the middle of the lower back surface of the club behind the lower segment of the hitting surface and thereafter decreasing in thickness with short linear and/or curved segments to a least thickness proximate the toe along the sole to add center weight with most mass placed along the lower portion of the club face most probable to impact a golf ball during repetitive strokes with least mass

proximate the toe and heel and increasing mass toward the center of the club to move back and lower the center of gravity from the club face to increase the moment of inertia of the club and reduce twisting caused by off-center hits while adding distance to well hit center shots, and

viii. a second periphery balancing weight system placed along the top and sides of the back surface of the club head structured to contact the sole weight, thereby defining a cavity in said back surface, said periphery balancing weight structure having least weight and thickness starting at the top of the back surface and gradually increasing in weight and thickness toward the sole of the club to lower the center of gravity of the club and provide better balance and strength behind the periphery of the hitting surface the face of the club to assist in resisting twisting of the club when contacted by an off-center hit to aid in maintaining shot alignment, and

ix. a third center weight system attached to the back surface behind the hitting surface above the sole weight with structure to reinforce the upper segment of the most probable contact segments of the hitting surface above the sole weight and add distance to off-center higher hits.

2. A tri-weight set of iron-type golf clubs according to Claim 1, wherein the height of the center weights extend to greater heights depending on the iron number.

3. A tri-mass positioning correlated set of iron-type golf clubs according to Claim 1, wherein the mass of the sole weight is positioned behind the lower portion of the hitting surface of the club face wherein approximately 85% of the shots leave the face of the hitting surface after being struck.

4. A tri-mass positioning correlated set of iron-type golf clubs according to Claim 3, wherein the mass is positioned behind the lower portion of the hitting surface of the club face wherein a Gaussian distribution of random repetitive shots leave the face of the hitting surface after being struck.

5. A tri-mass positioning correlated set of iron-type golf clubs according to claim 1, wherein the periphery balancing weight structure along the back of the toe defines a first rounded depression leading into the back cavity.